

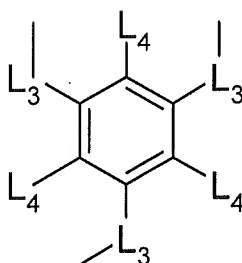
## IN THE CLAIMS

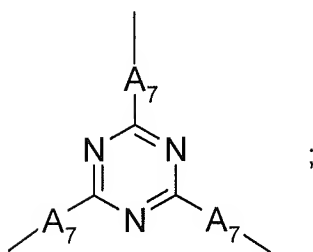
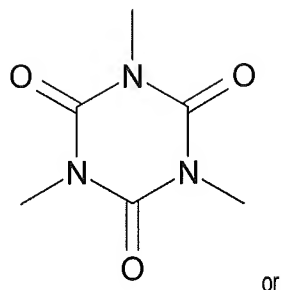
The text of all claims under examination is submitted, and the status of each is identified. This listing of claims replaces all prior versions, and listings, of claims in the application.

**1-18. (cancelled).**

**19. (previously presented):** A polymer material comprising components (a) and (b) in form of a fiber, textile, nonwoven or film is contained on or visibly below the surface of a protective clothing, a mask or an irradiation indicating tag, wherein

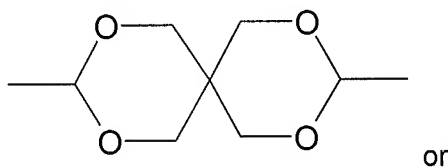
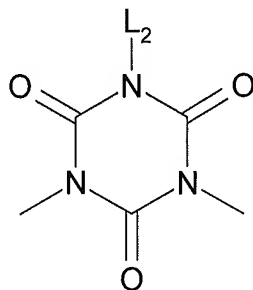
(a) is a compound comprising one or more mono-hydroxyphenyl moieties, each carrying one or two bonds to either a linking group connecting the moiety with 1 to 3 further moieties of the same type or to an anchor group, and 1-3 further substituents selected from alkyl of 1 to 12 carbon atoms, where the linking groups are di-, tri- or tetravalent aliphatic groups of 1 to 20 carbon atoms and divalent linking groups are selected from alkylene which may be interrupted and/or end-capped with  $-O-$ ,  $-NH-$ ,  $-S-$ ,  $-CO-$ ,  $-COO-$ ,  $-OCO-$ ,  $-NHCO-$ ,  $-CONH-$ , a group  $L_1$ , phenylene or phenylene which is substituted by  $C_1$ - $C_{12}$ alkyl and/or  $C_1$ - $C_{12}$ alkoxy and/or  $C_2$ - $C_{12}$ alkanoyloxy and/or  $C_3$ - $C_{12}$ alkenoyloxy; divalent mono-, di- or tricycloalkylene groups; divalent mono-, di- or tricycloalkylene groups interrupted by  $-O-$ ;  $-O-$ ;  $-NH-$ ;  $-S-$ ;  $-CO-$ ;  $-COO-$ ;  $-OCO-$ ;  $-NHCO-$ ; and  $-CONH-$ ; trivalent groups are selected from trivalent alkyl groups of 3 to 20 carbon atoms; said trivalent alkyl groups interrupted and/or end-capped with  $-O-$ ,  $-NH-$ ,  $-S-$ ,  $-CO-$ ,  $-COO-$ ,  $-OCO-$ ,  $-NHCO-$ ,  $-CONH-$ , a group  $L_1$ , phenylene or phenylene which is substituted by  $C_1$ - $C_{12}$ alkyl and/or  $C_1$ - $C_{12}$ alkoxy and/or  $C_2$ - $C_{12}$ alkanoyloxy and/or  $C_3$ - $C_{12}$ alkenoyloxy; and trivalent groups of the formulae

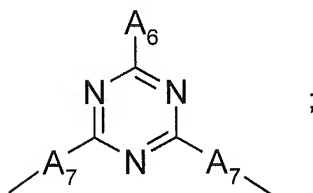




tetravalent groups are selected from tetravalent alkyl groups of 4 to 20 carbon atoms; and said tetravalent alkyl groups interrupted and/or end-capped with  $-O-$ ,  $-NH-$ ,  $-S-$ ,  $-CO-$ ,  $-COO-$ ,  $-OCO-$ ,  $-NHCO-$ ,  $-CONH-$ , a group  $L_1$ , phenylene or phenylene which is substituted by  $C_1-C_{12}$ alkyl and/or  $C_1-C_{12}$ alkoxy and/or  $C_2-C_{12}$ alkanoyloxy and/or  $C_3-C_{12}$ alkenoyloxy; wherein

$L_1$  is a group selected from the formulae





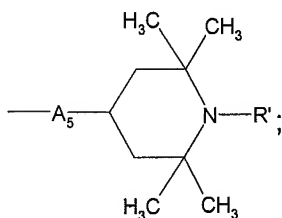
$L_2$  is OH,  $C_1$ - $C_{12}$ alkyl,  $C_1$ - $C_{12}$ alkoxy,  $C_2$ - $C_{12}$ hydroxyalkyl;  $C_2$ - $C_{12}$ hydroxyalkoxy;

$L_3$  independently are  $C_1$ - $C_4$ alkylene;

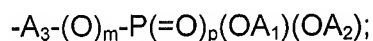
$L_4$  independently are H or  $C_1$ - $C_4$ alkyl; and

anchor groups are selected from

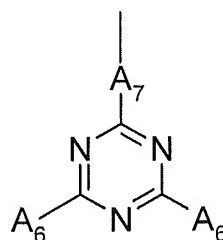
$C_1$ - $C_{22}$ alkyl;  $C_1$ - $C_{22}$ alkyl- $A_5$ -;  $C_2$ - $C_{22}$ alkyl interrupted by - $A_5$ -; - $A_4$ -phenyl; - $A_4$ -phenyl where the phenyl core is substituted by  $C_1$ - $C_{12}$ alkyl,  $C_1$ - $C_{12}$ alkoxy,  $C_2$ - $C_{12}$ alkanoyloxy and/or  $C_3$ - $C_{12}$ alkenoyloxy;  $C_1$ - $C_8$ alkyl substituted by a group of the formula



phosphite, phosphate or phosphonate ester groups, of the formula



or the anchor group is of the formula



where m and p independently are 0 or 1;

A<sub>1</sub> and A<sub>2</sub> independently are C<sub>1</sub>-C<sub>12</sub>alkyl or phenyl or phenyl substituted by C<sub>1</sub>-C<sub>12</sub>alkyl or an equivalent of an alkaline, alkaline earth or aluminum atom;

A<sub>3</sub> is a direct bond or C<sub>1</sub>-C<sub>8</sub>alkylene;

A<sub>4</sub> is selected from C<sub>1</sub>-C<sub>8</sub>alkylene and A<sub>5</sub>;

A<sub>5</sub> is selected from -O-, -NH-, -S-, -CO-, -COO-, -OCO-, -NHCO- and -CONH-;

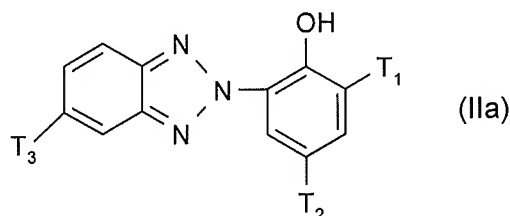
A<sub>6</sub> is selected from C<sub>1</sub>-C<sub>18</sub>alkoxy, C<sub>1</sub>-C<sub>18</sub>alkylthio and C<sub>1</sub>-C<sub>18</sub>alkylamino;

A<sub>7</sub> is -O- or -NH-;

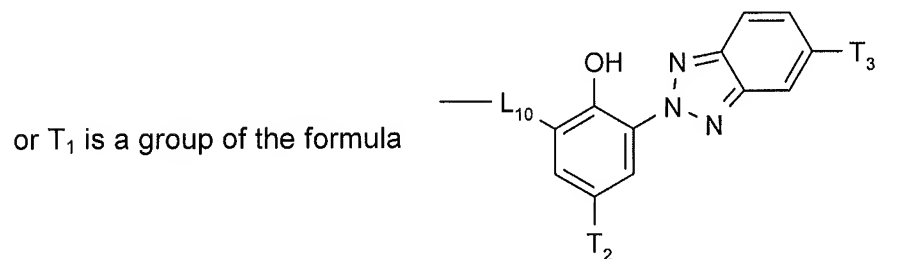
R' is H, C<sub>1</sub>-C<sub>18</sub>alkyl, C<sub>1</sub>-C<sub>18</sub>alkoxy or cyclohexyloxy;

or the anchor group is C<sub>3</sub>-C<sub>22</sub>alkylene or C<sub>3</sub>-C<sub>22</sub>oxaalkylene attached with both open bonds to adjacent carbon atoms of the mono-hydroxyphenyl moiety; or

component (a) can also be a phenolic UV absorber compound selected from benzotriazoles of the formula (IIa), 2-hydroxybenzophenones of the formula (IIb) and 2-hydroxyphenyltriazines of formula (IIc):



wherein T<sub>1</sub> is hydrogen, C<sub>1</sub>-C<sub>18</sub>alkyl, or C<sub>1</sub>-C<sub>18</sub>alkyl which is substituted by phenyl,



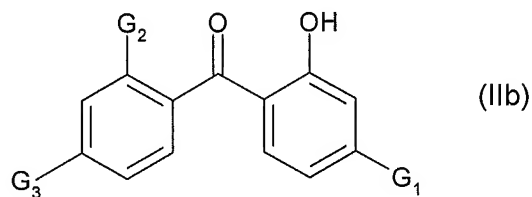
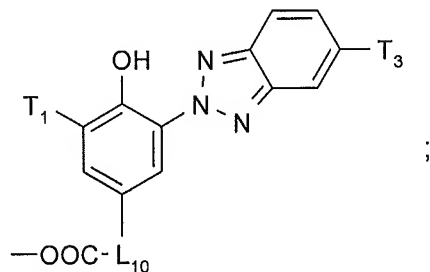
L<sub>10</sub> is a divalent group -(CH<sub>2</sub>)<sub>n</sub>-, where n is from the range 1-8;

T<sub>2</sub> is hydrogen, C<sub>1</sub>-C<sub>18</sub>alkyl, or is C<sub>1</sub>-C<sub>18</sub>alkyl which is substituted by COOT<sub>5</sub>, C<sub>1</sub>-C<sub>18</sub>alkoxy, hydroxyl, phenyl or C<sub>2</sub>-C<sub>18</sub>acyloxy;

T<sub>3</sub> is hydrogen, halogen, C<sub>1</sub>-C<sub>18</sub>alkyl, C<sub>1</sub>-C<sub>18</sub>alkoxy, C<sub>2</sub>-C<sub>18</sub>acyloxy, perfluoroalkyl of 1 to 12 carbon atoms, or T<sub>3</sub> is phenyl; and

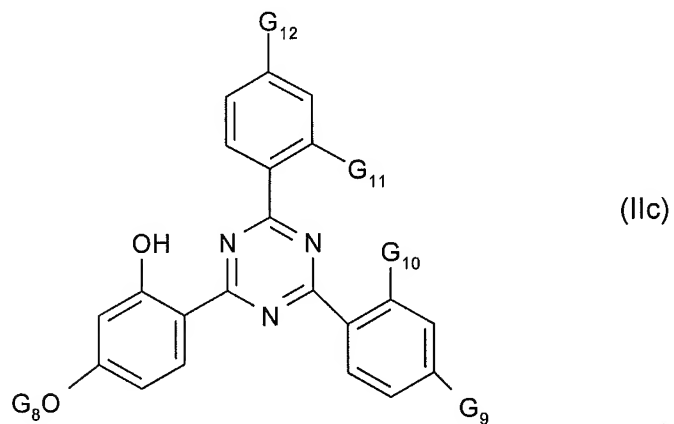
T<sub>5</sub> is C<sub>1</sub>-C<sub>18</sub>alkyl or C<sub>4</sub>-C<sub>50</sub>alkyl interrupted by one or more O and/or substituted by OH or

by a group



wherein

G<sub>1</sub>, G<sub>2</sub> and G<sub>3</sub> independently are hydrogen, hydroxy or C<sub>1</sub>-C<sub>18</sub>alkoxy;



wherein

G<sub>8</sub> is C<sub>1</sub>-C<sub>18</sub>alkyl, or is C<sub>4</sub>-C<sub>18</sub>alkyl which is interrupted by COO or OCO or O, or is interrupted by O and substituted by OH; and

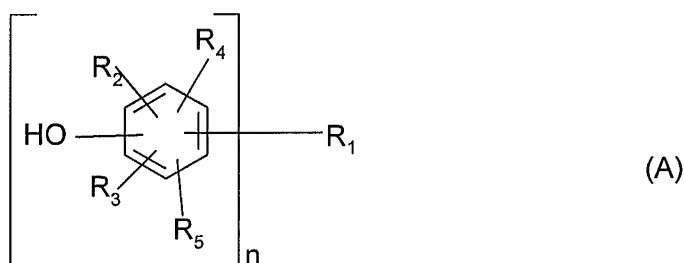
G<sub>9</sub>, G<sub>10</sub>, G<sub>11</sub> and G<sub>12</sub> independently are hydrogen, methyl, hydroxy or OG<sub>8</sub>; and G<sub>9</sub> and G<sub>12</sub> also comprise phenyl; and

(b) is a colour former,  
wherein said protective clothing, mask or irradiation indicating tag undergoes an irreversible color change upon exposure to irradiation.

**20. (previously presented):** The polymer material according to claim 19, wherein the irradiation is of higher energy than visible light and is selected from ultraviolet light, X-ray, gamma radiation and particle radiation.

**21. (cancelled).**

**22. (previously presented):** The polymer material according to claim 19, wherein component (a) is a compound of the formula (A)



wherein

$R_2$  is methyl or tertiary  $C_4$ - $C_{12}$  alkyl;

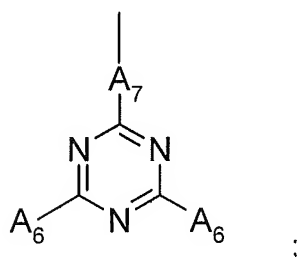
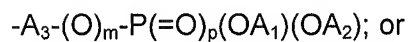
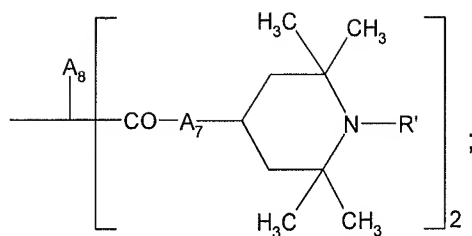
$R_3$ ,  $R_4$  and  $R_5$  independently are hydrogen, methyl or tertiary  $C_4$ - $C_{12}$  alkyl;

$n$  is from the range 1-4:

when  $n$  is 1,

$R_1$  is tertiary  $C_4$ - $C_{12}$  alkyl;  $C_1$ - $C_{22}$  alkyl- $A_5$ -;  $C_2$ - $C_{22}$  alkyl interrupted by  $-A_5$ -;  $-A_5$ -phenyl;  $-A_5$ -phenyl where the phenyl core is substituted by  $C_1$ - $C_{12}$  alkyl;  $-A_4$ -phenyl where the phenyl core is substituted by  $C_2$ - $C_{12}$  alkanoyloxy and/or  $C_3$ - $C_{12}$  alkenoyloxy, and optionally further by

$C_1$ - $C_{12}$  alkyl; or  $R_1$  together with  $R_5$  is  $C_3$ - $C_{22}$  alkylene or  $C_3$ - $C_{22}$  oxaalkylene attached with both open bonds to adjacent carbon atoms of the mono-hydroxyphenyl moiety; or is a group of one the formulae



where m and p independently are 0 or 1;

A<sub>1</sub> and A<sub>2</sub> independently are C<sub>1</sub>-C<sub>12</sub>alkyl or phenyl or phenyl substituted by C<sub>1</sub>-C<sub>12</sub>alkyl or an equivalent of an alkaline, alkaline earth or aluminum atom;

A<sub>3</sub> is a direct bond or C<sub>1</sub>-C<sub>8</sub>alkylene;

A<sub>4</sub> is selected from C<sub>1</sub>-C<sub>8</sub>alkylene, -O-, -NH-, -S-, -CO-, -COO-, -OCO-, -NHCO- and -CONH-;

A<sub>5</sub> is selected from -O-, -NH-, -S-, -CO-, -COO-, -OCO-, -NHCO- and -CONH-;

A<sub>6</sub> is selected from C<sub>1</sub>-C<sub>18</sub>alkoxy, C<sub>1</sub>-C<sub>18</sub>alkylthio and C<sub>1</sub>-C<sub>18</sub>alkylamino;

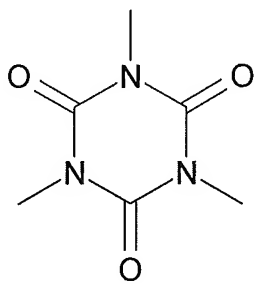
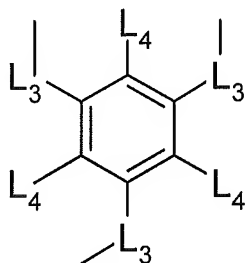
A<sub>7</sub> is -O- or -NH-;

A<sub>8</sub> is C<sub>1</sub>-C<sub>7</sub>alkyl; and

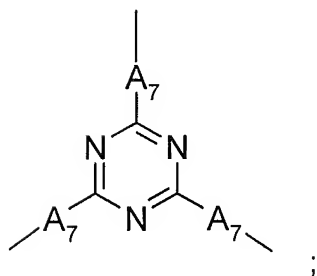
R' is C<sub>1</sub>-C<sub>18</sub>alkyl;

when n is 2, R<sub>1</sub> is C<sub>1</sub>-C<sub>20</sub>alkylene which may be interrupted and/or end-capped with -O-, -NH-, -S-, -CO-, -COO-, -OCO-, -NHCO-, -CONH-, -L<sub>1</sub>-, phenylene, phenylene which is substituted by C<sub>1</sub>-C<sub>12</sub>alkyl and/or C<sub>1</sub>-C<sub>12</sub>alkoxy and/or C<sub>2</sub>-C<sub>12</sub>alkanoyloxy and/or C<sub>3</sub>-C<sub>12</sub>alkenoyloxy; divalent mono-, di- or tricycloalkylene groups; divalent mono-, di- or tricycloalkylene groups interrupted by -O-, -O-, -NH-, -S-, -CO-, -COO-, -OCO-, -NHCO-, or -CONH-;

when n is 3, R<sub>1</sub> is trivalent alkyl of 3 to 20 carbon atoms; said trivalent alkyl interrupted or end-capped with -O-, -NH-, -S-, -CO-, -COO-, -OCO-, -NHCO-, -CONH-, -L<sub>1</sub>-, phenylene or phenylene which is substituted by C<sub>1</sub>-C<sub>12</sub>alkyl and/or C<sub>1</sub>-C<sub>12</sub>alkoxy and/or C<sub>2</sub>-C<sub>12</sub>alkanoyloxy and/or C<sub>3</sub>-C<sub>12</sub>alkenoyloxy; or trivalent groups of the formulae



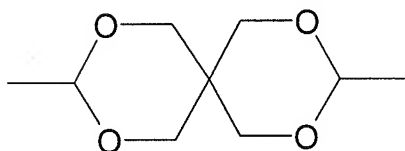
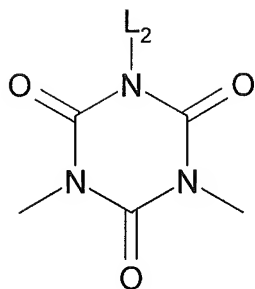
or



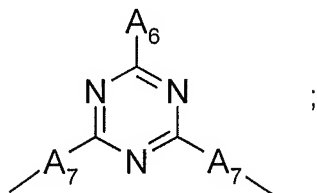
when n is 4, R<sub>1</sub> is tetravalent alkyl of 4 to 20 carbon atoms; said tetravalent alkyl interrupted or end-capped with -O-, -NH-, -S-, -CO-, -COO-, -OCO-, -NHCO-, -CONH-, -L<sub>1</sub>-, phenylene or phenylene which is substituted by C<sub>1</sub>-C<sub>12</sub>alkyl and/or C<sub>1</sub>-C<sub>12</sub>alkoxy and/or C<sub>2</sub>-C<sub>12</sub>alkanoyloxy and/or C<sub>3</sub>-C<sub>12</sub>alkenoyloxy;

L<sub>1</sub> is a group selected from the formulae





and



$L_2$  is OH,  $C_1$ - $C_{12}$ alkyl,  $C_1$ - $C_{12}$ alkoxy,  $C_2$ - $C_{12}$ hydroxyalkyl; or  $C_2$ - $C_{12}$ hydroxyalkoxy;

$L_3$  independently are  $C_1$ - $C_4$ alkylene; and

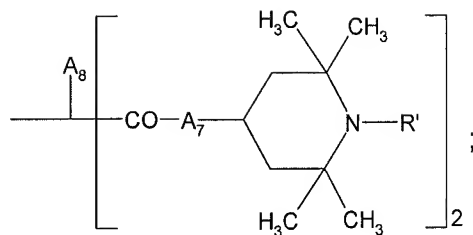
$L_4$  independently are H or  $C_1$ - $C_4$ alkyl.

**23. (previously presented):** The polymer material according to claim 22, wherein  $R_2$  is methyl, tert-butyl or tert-pentyl;

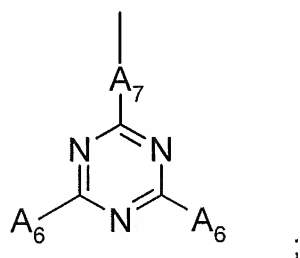
$R_3$ ,  $R_4$  and  $R_5$  independently are hydrogen, methyl, tert-butyl or tert-pentyl;

when n is 1,

$R_1$  is tertiary butyl, tertiary pentyl;  $C_1$ - $C_{22}$ alkyl- $A_5$ -;  $C_2$ - $C_{22}$ alkyl interrupted by  $-A_5-$ ;  $-A_5$ -phenyl where the phenyl core is substituted by  $C_1$ - $C_{12}$ alkyl;  $-A_4$ -phenyl where the phenyl core is substituted by  $C_3$ - $C_4$ alkenoyloxy and  $C_1$ - $C_{12}$ alkyl; or  $R_1$  together with  $R_5$  is  $C_3$ - $C_{22}$ alkylene or  $C_3$ - $C_{22}$ oxaalkylene attached with both open bonds to adjacent carbon atoms of the mono-hydroxyphenyl moiety; or  $R_1$  is a group of one the formulae



$\text{---A}_3\text{---P(=O)(OA}_1\text{)(OA}_2\text{); or}$



where

A<sub>1</sub> and A<sub>2</sub> independently are C<sub>1</sub>-C<sub>4</sub>alkyl or an equivalent of a metal atom selected from Li, Na, K, ½ Mg, ½ Ca and 1/3 Al;

A<sub>3</sub> is methylene;

A<sub>4</sub> is C<sub>1</sub>-C<sub>8</sub>alkylene;

A<sub>5</sub> is selected from -O-, -S-, -COO-, -OCO-, -NHCO- and -CONH-;

A<sub>6</sub> is selected from C<sub>4</sub>-C<sub>18</sub>alkylthio and C<sub>4</sub>-C<sub>18</sub>alkylamino;

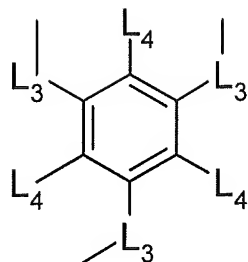
A<sub>7</sub> is -NH-;

A<sub>8</sub> is C<sub>1</sub>-C<sub>7</sub>alkyl; and

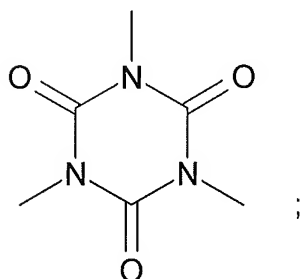
R' is C<sub>1</sub>-C<sub>18</sub>alkyl;

when n is 2, R<sub>1</sub> is C<sub>1</sub>-C<sub>12</sub>alkylene; C<sub>2</sub>-C<sub>20</sub>alkylene interrupted and/or end-capped with -O-, -S-, -COO-, -OCO-, -NHCO-, -CONH- or -L<sub>1</sub>-; or R<sub>1</sub> is a divalent mono-, di- or tricycloalkylene group; or R<sub>1</sub> is -O-; -NH-; or -S-;

when n is 3, R<sub>1</sub> is trivalent alkyl of 3 to 20 carbon atoms; said trivalent alkyl interrupted by -O-, -S-, -COO-, -OCO-, -NHCO-, -CONH-, phenylene or phenylene which is substituted by C<sub>1</sub>-C<sub>12</sub>alkyl; or R<sub>1</sub> is a trivalent group of one of the formulae

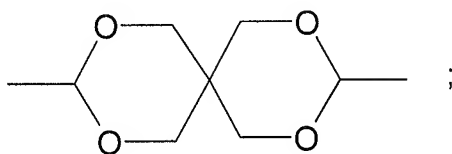


or



when n is 4, R<sub>1</sub> is tetravalent alkyl of 4 to 20 carbon atoms; or said tetravalent alkyl interrupted by -O-, -S-, -COO-, -OCO-, -NHCO- or -CONH-; and

L<sub>1</sub> is a group of the formula



L<sub>3</sub> independently are C<sub>1</sub>-C<sub>4</sub>alkylene; and

L<sub>4</sub> independently are H or C<sub>1</sub>-C<sub>4</sub>alkyl.

**24. (previously presented):** The polymer material according to claim 19, wherein the colour former is a triphenylmethane, lactone, benzoxazine, spiropyran, fluoran or phthalide.

**25. (currently amended):** The polymer material according to claim 19, wherein the polymeric material contains 0.001 to 10 % by weight of ~~the phenolic antioxidant and/or phenolic UVA component (a),~~ based on the total weight of the polymeric material.

**26. (previously presented):** The polymer material according to claim 19, wherein the polymeric material contains 0.001 to 10 % by weight of the colour former with respect to the total weight of the polymeric material.

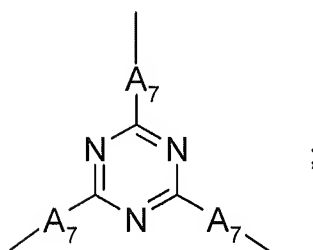
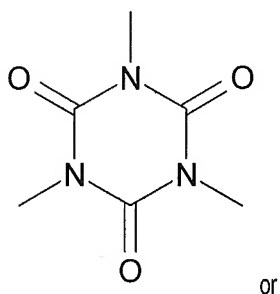
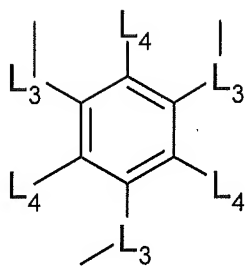
**27. (previously presented):** The polymer material according to claim 26, wherein the polymeric material contains 0.01 to 5 % by weight of the colour former with respect to the total weight of the polymeric material.

**28. (previously presented):** The polymer material according to claim 19, wherein the polymeric material is a transparent thermoplast.

**29. (previously presented):** The polymer material according to claim 19, wherein the polymeric material is selected from styrene acrylonitrile copolymer, polyolefin, polyvinylchloride, polychlorobutadiene, polyesters and glycol modified polyesters, polyacrylics, polystyrene, acrylonitrile styrene acrylate copolymer, polyamide, acrylonitrile styrene butadiene copolymer, polycarbonate and blends or alloys thereof.

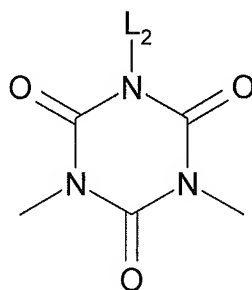
**30. (previously presented):** Process for monitoring irradiation by X-ray or radioactive material, which process comprises placing a tag or sample of a polymer material comprising components (a) and (b) in the site to be controlled, and subsequently checking the colour of the tag or sample, wherein

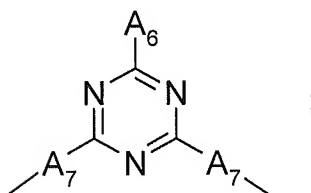
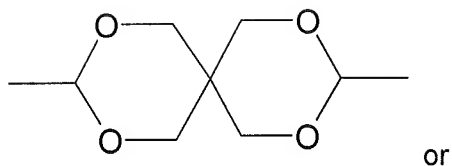
(a) is a compound comprising one or more mono-hydroxyphenyl moieties, each carrying one or two bonds to either a linking group connecting the moiety with 1 to 3 further moieties of the same type or to an anchor group, and 1-3 further substituents selected from alkyl of 1 to 12 carbon atoms, where the linking groups are di-, tri- or tetravalent aliphatic groups of 1 to 20 carbon atoms and divalent linking groups are selected from alkylene which may be interrupted and/or end-capped with -O-, -NH-, -S-, -CO-, -COO-, -OCO-, -NHCO-, -CONH-, a group L<sub>1</sub>, phenylene or phenylene which is substituted by C<sub>1</sub>-C<sub>12</sub>alkyl and/or C<sub>1</sub>-C<sub>12</sub>alkoxy and/or C<sub>2</sub>-C<sub>12</sub>alkanoyloxy and/or C<sub>3</sub>-C<sub>12</sub>alkenoyloxy; divalent mono-, di- or tricycloalkylene groups; divalent mono-, di- or tricycloalkylene groups interrupted by -O-, -O-, -NH-, -S-, -CO-, -COO-, -OCO-, -NHCO-, and -CONH-; trivalent groups are selected from trivalent alkyl groups of 3 to 20 carbon atoms; said trivalent alkyl groups interrupted and/or end-capped with -O-, -NH-, -S-, -CO-, -COO-, -OCO-, -NHCO-, -CONH-, a group L<sub>1</sub>, phenylene or phenylene which is substituted by C<sub>1</sub>-C<sub>12</sub>alkyl and/or C<sub>1</sub>-C<sub>12</sub>alkoxy and/or C<sub>2</sub>-C<sub>12</sub>alkanoyloxy and/or C<sub>3</sub>-C<sub>12</sub>alkenoyloxy; and trivalent groups of the formulae



tetravalent groups are selected from tetravalent alkyl groups of 4 to 20 carbon atoms; and said tetravalent alkyl groups interrupted and/or end-capped with  $-O-$ ,  $-NH-$ ,  $-S-$ ,  $-CO-$ ,  $-COO-$ ,  $-OCO-$ ,  $-NHCO-$ ,  $-CONH-$ , a group  $L_1$ , phenylene or phenylene which is substituted by  $C_1$ - $C_{12}$ alkyl and/or  $C_1$ - $C_{12}$ alkoxy and/or  $C_2$ - $C_{12}$ alkanoyloxy and/or  $C_3$ - $C_{12}$ alkenoyloxy; wherein

$L_1$  is a group selected from the formulae





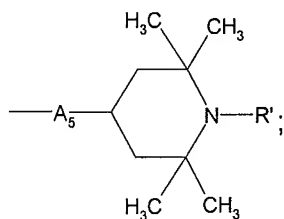
$L_2$  is OH,  $C_1$ - $C_{12}$ alkyl,  $C_1$ - $C_{12}$ alkoxy,  $C_2$ - $C_{12}$ hydroxyalkyl;  $C_2$ - $C_{12}$ hydroxyalkoxy;

$L_3$  independently are  $C_1$ - $C_4$ alkylene;

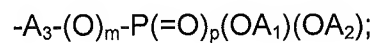
$L_4$  independently are H or  $C_1$ - $C_4$ alkyl; and

anchor groups are selected from

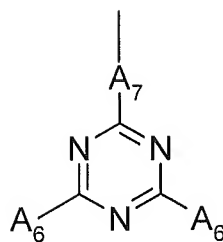
$C_1$ - $C_{22}$ alkyl;  $C_1$ - $C_{22}$ alkyl- $A_5$ -;  $C_2$ - $C_{22}$ alkyl interrupted by - $A_5$ -; - $A_4$ -phenyl; - $A_4$ -phenyl where the phenyl core is substituted by  $C_1$ - $C_{12}$ alkyl,  $C_1$ - $C_{12}$ alkoxy,  $C_2$ - $C_{12}$ alkanoyloxy and/or  $C_3$ - $C_{12}$ alkenoyloxy;  $C_1$ - $C_8$ alkyl substituted by a group of the formula



phosphite, phosphate or phosphonate ester groups, of the formula



or the anchor group is of the formula



where m and p independently are 0 or 1;

A<sub>1</sub> and A<sub>2</sub> independently are C<sub>1</sub>-C<sub>12</sub>alkyl or phenyl or phenyl substituted by C<sub>1</sub>-C<sub>12</sub>alkyl or an equivalent of an alkaline, alkaline earth or aluminum atom;

A<sub>3</sub> is a direct bond or C<sub>1</sub>-C<sub>8</sub>alkylene;

A<sub>4</sub> is selected from C<sub>1</sub>-C<sub>8</sub>alkylene and A<sub>5</sub>;

A<sub>5</sub> is selected from -O-, -NH-, -S-, -CO-, -COO-, -OCO-, -NHCO- and -CONH-;

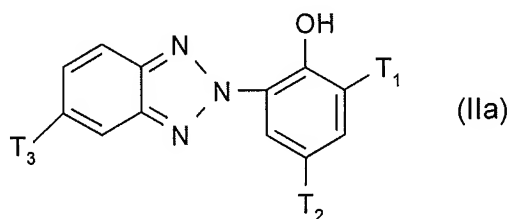
A<sub>6</sub> is selected from C<sub>1</sub>-C<sub>18</sub>alkoxy, C<sub>1</sub>-C<sub>18</sub>alkylthio and C<sub>1</sub>-C<sub>18</sub>alkylamino;

A<sub>7</sub> is -O- or -NH-;

R' is H, C<sub>1</sub>-C<sub>18</sub>alkyl, C<sub>1</sub>-C<sub>18</sub>alkoxy or cyclohexyloxy;

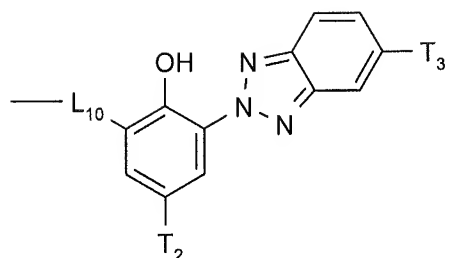
or the anchor group is C<sub>3</sub>-C<sub>22</sub>alkylene or C<sub>3</sub>-C<sub>22</sub>oxaalkylene attached with both open bonds to adjacent carbon atoms of the mono-hydroxyphenyl moiety; or

component (a) can also be a phenolic UV absorber compound selected from benzotriazoles of the formula (IIa), 2-hydroxybenzophenones of the formula (IIb) and 2-hydroxyphenyltriazines of formula (IIc):



wherein T<sub>1</sub> is hydrogen, C<sub>1</sub>-C<sub>18</sub>alkyl, or C<sub>1</sub>-C<sub>18</sub>alkyl which is substituted by phenyl,

or  $T_1$  is a group of the formula



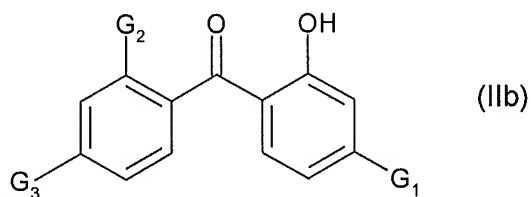
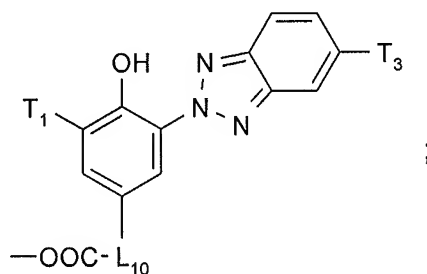
$L_{10}$  is a divalent group  $-(CH_2)_n-$ , where  $n$  is from the range 1-8;

$T_2$  is hydrogen,  $C_1$ - $C_{18}$ alkyl, or is  $C_1$ - $C_{18}$ alkyl which is substituted by  $COOT_5$ ,  $C_1$ - $C_{18}$ alkoxy, hydroxyl, phenyl or  $C_2$ - $C_{18}$ acyloxy;

$T_3$  is hydrogen, halogen,  $C_1$ - $C_{18}$ alkyl,  $C_1$ - $C_{18}$ alkoxy,  $C_2$ - $C_{18}$ acyloxy, perfluoroalkyl of 1 to 12 carbon atoms, or  $T_3$  is phenyl; and

$T_5$  is  $C_1$ - $C_{18}$ alkyl or  $C_4$ - $C_{50}$ alkyl interrupted by one or more O and/or substituted by OH or

by a group

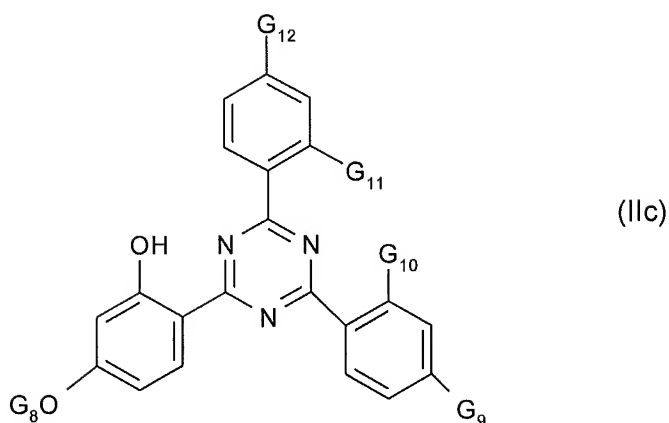


(IIb)

wherein

$G_1$ ,  $G_2$  and  $G_3$  independently are hydrogen, hydroxy or  $C_1$ - $C_{18}$ alkoxy;





wherein

G<sub>8</sub> is C<sub>1</sub>-C<sub>18</sub>alkyl, or is C<sub>4</sub>-C<sub>18</sub>alkyl which is interrupted by COO or OCO or O, or is interrupted by O and substituted by OH; and

G<sub>9</sub>, G<sub>10</sub>, G<sub>11</sub> and G<sub>12</sub> independently are hydrogen, methyl, hydroxy or OG<sub>8</sub>; and G<sub>9</sub> and G<sub>12</sub> also comprise phenyl; and

(b) is a colour former.

**31. (previously presented):** The process according to claim 30, wherein a polymer material comprising components a) and b) are in the form of a fiber, textile, nonwoven or film contained on or visibly below a surface of a protective clothing, a mask or an irradiation indicating tag, and said protective clothing, mask or irradiation indicating tag undergoes an irreversible color change upon exposure to irradiation.

**32. (previously presented):** The polymer material according to claim 20, wherein the irradiation is from ultraviolet laser or ultraviolet lamp radiation of 285 to 400 nm, electron radiation, X-ray and gamma radiation.

**33. (new):** Process for monitoring irradiation, which process comprises placing a tag or sample of a polymer material comprising components (a) and (b) in the site to be controlled,

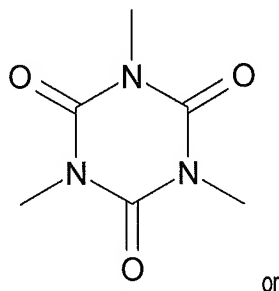
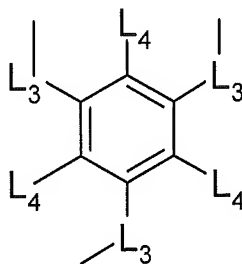
exposing said tag or sample to irradiation from ultraviolet laser or ultraviolet lamp radiation of 285 to 400 nm, electron radiation, X-ray or gamma radiation,

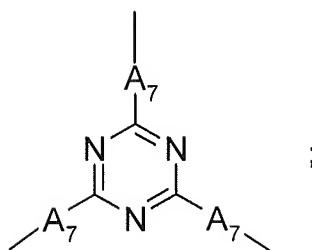
and

subsequently checking the colour of the tag or sample,

wherein

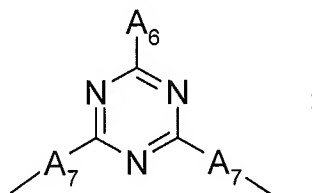
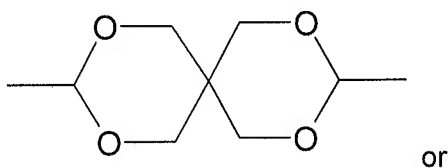
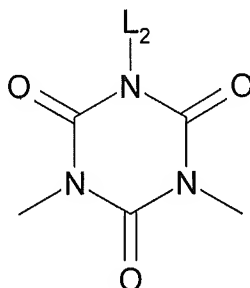
(a) is a compound comprising one or more mono-hydroxyphenyl moieties, each carrying one or two bonds to either a linking group connecting the moiety with 1 to 3 further moieties of the same type or to an anchor group, and 1-3 further substituents selected from alkyl of 1 to 12 carbon atoms, where the linking groups are di-, tri- or tetravalent aliphatic groups of 1 to 20 carbon atoms and divalent linking groups are selected from alkylene which may be interrupted and/or end-capped with -O-, -NH-, -S-, -CO-, -COO-, -OCO-, -NHCO-, -CONH-, a group L<sub>1</sub>, phenylene or phenylene which is substituted by C<sub>1</sub>-C<sub>12</sub>alkyl and/or C<sub>1</sub>-C<sub>12</sub>alkoxy and/or C<sub>2</sub>-C<sub>12</sub>alkanoyloxy and/or C<sub>3</sub>-C<sub>12</sub>alkenoyloxy; divalent mono-, di- or tricycloalkylene groups; divalent mono-, di- or tricycloalkylene groups interrupted by -O-, -O-, -NH-, -S-, -CO-, -COO-, -OCO-, -NHCO-, and -CONH-; trivalent groups are selected from trivalent alkyl groups of 3 to 20 carbon atoms; said trivalent alkyl groups interrupted and/or end-capped with -O-, -NH-, -S-, -CO-, -COO-, -OCO-, -NHCO-, -CONH-, a group L<sub>1</sub>, phenylene or phenylene which is substituted by C<sub>1</sub>-C<sub>12</sub>alkyl and/or C<sub>1</sub>-C<sub>12</sub>alkoxy and/or C<sub>2</sub>-C<sub>12</sub>alkanoyloxy and/or C<sub>3</sub>-C<sub>12</sub>alkenoyloxy; and trivalent groups of the formulae





tetravalent groups are selected from tetravalent alkyl groups of 4 to 20 carbon atoms; and said tetravalent alkyl groups interrupted and/or end-capped with  $-O-$ ,  $-NH-$ ,  $-S-$ ,  $-CO-$ ,  $-COO-$ ,  $-OCO-$ ,  $-NHCO-$ ,  $-CONH-$ , a group  $L_1$ , phenylene or phenylene which is substituted by  $C_1$ - $C_{12}$ alkyl and/or  $C_1$ - $C_{12}$ alkoxy and/or  $C_2$ - $C_{12}$ alkanoyloxy and/or  $C_3$ - $C_{12}$ alkenoyloxy; wherein

$L_1$  is a group selected from the formulae



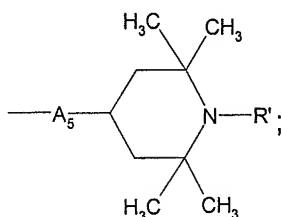
$L_2$  is  $OH$ ,  $C_1$ - $C_{12}$ alkyl,  $C_1$ - $C_{12}$ alkoxy,  $C_2$ - $C_{12}$ hydroxyalkyl;  $C_2$ - $C_{12}$ hydroxyalkoxy;

$L_3$  independently are  $C_1$ - $C_4$ alkylene;

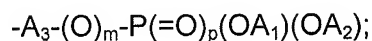
$L_4$  independently are  $H$  or  $C_1$ - $C_4$ alkyl; and

anchor groups are selected from

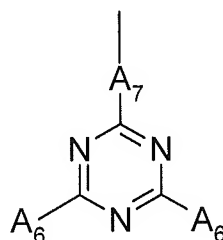
C<sub>1</sub>-C<sub>22</sub>alkyl; C<sub>1</sub>-C<sub>22</sub>alkyl-A<sub>5</sub>-; C<sub>2</sub>-C<sub>22</sub>alkyl interrupted by -A<sub>5</sub>-; -A<sub>4</sub>-phenyl; -A<sub>4</sub>-phenyl where the phenyl core is substituted by C<sub>1</sub>-C<sub>12</sub>alkyl, C<sub>1</sub>-C<sub>12</sub>alkoxy, C<sub>2</sub>-C<sub>12</sub>alkanoyloxy and/or C<sub>3</sub>-C<sub>12</sub>alkenoyloxy; C<sub>1</sub>-C<sub>8</sub>alkyl substituted by a group of the formula



phosphite, phosphate or phosphonate ester groups, of the formula



or the anchor group is of the formula



where m and p independently are 0 or 1;

A<sub>1</sub> and A<sub>2</sub> independently are C<sub>1</sub>-C<sub>12</sub>alkyl or phenyl or phenyl substituted by C<sub>1</sub>-C<sub>12</sub>alkyl or an equivalent of an alkaline, alkaline earth or aluminum atom;

A<sub>3</sub> is a direct bond or C<sub>1</sub>-C<sub>8</sub>alkylene;

A<sub>4</sub> is selected from C<sub>1</sub>-C<sub>8</sub>alkylene and A<sub>5</sub>;

A<sub>5</sub> is selected from -O-, -NH-, -S-, -CO-, -COO-, -OCO-, -NHCO- and -CONH-;

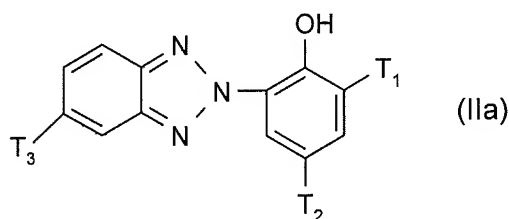
A<sub>6</sub> is selected from C<sub>1</sub>-C<sub>18</sub>alkoxy, C<sub>1</sub>-C<sub>18</sub>alkylthio and C<sub>1</sub>-C<sub>18</sub>alkylamino;

A<sub>7</sub> is -O- or -NH-;

R' is H, C<sub>1</sub>-C<sub>18</sub>alkyl, C<sub>1</sub>-C<sub>18</sub>alkoxy or cyclohexyloxy;

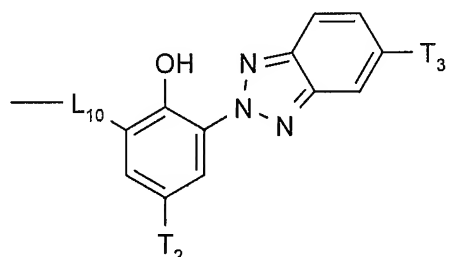
or the anchor group is C<sub>3</sub>-C<sub>22</sub>alkylene or C<sub>3</sub>-C<sub>22</sub>oxaalkylene attached with both open bonds to adjacent carbon atoms of the mono-hydroxyphenyl moiety; or

component (a) can also be a phenolic UV absorber compound selected from benzotriazoles of the formula (IIa), 2-hydroxybenzophenones of the formula (IIb) and 2-hydroxyphenyltriazines of formula (IIc):



wherein T<sub>1</sub> is hydrogen, C<sub>1</sub>-C<sub>18</sub>alkyl, or C<sub>1</sub>-C<sub>18</sub>alkyl which is substituted by phenyl,

or T<sub>1</sub> is a group of the formula



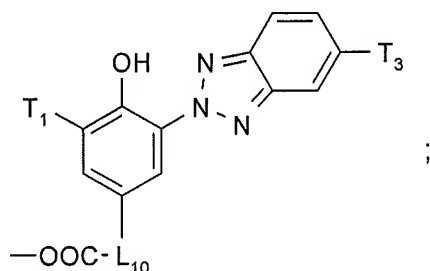
L<sub>10</sub> is a divalent group -(CH<sub>2</sub>)<sub>n</sub>-, where n is from the range 1-8;

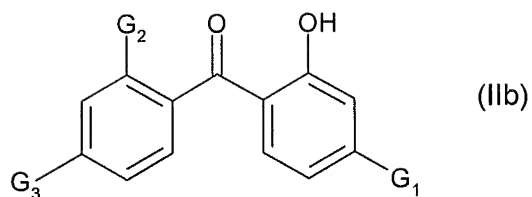
T<sub>2</sub> is hydrogen, C<sub>1</sub>-C<sub>18</sub>alkyl, or is C<sub>1</sub>-C<sub>18</sub>alkyl which is substituted by COOT<sub>5</sub>, C<sub>1</sub>-C<sub>18</sub>alkoxy, hydroxyl, phenyl or C<sub>2</sub>-C<sub>18</sub>acyloxy;

T<sub>3</sub> is hydrogen, halogen, C<sub>1</sub>-C<sub>18</sub>alkyl, C<sub>1</sub>-C<sub>18</sub>alkoxy, C<sub>2</sub>-C<sub>18</sub>acyloxy, perfluoroalkyl of 1 to 12 carbon atoms, or T<sub>3</sub> is phenyl; and

T<sub>5</sub> is C<sub>1</sub>-C<sub>18</sub>alkyl or C<sub>4</sub>-C<sub>50</sub>alkyl interrupted by one or more O and/or substituted by OH or

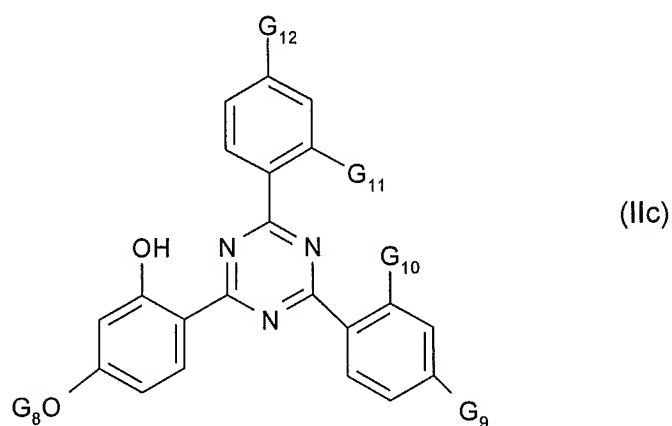
by a group





wherein

G<sub>1</sub>, G<sub>2</sub> and G<sub>3</sub> independently are hydrogen, hydroxy or C<sub>1</sub>-C<sub>18</sub>alkoxy;



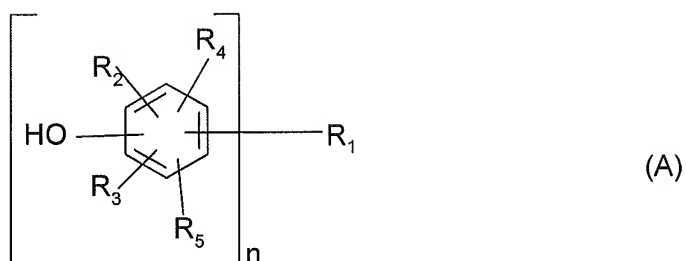
wherein

G<sub>8</sub> is C<sub>1</sub>-C<sub>18</sub>alkyl, or is C<sub>4</sub>-C<sub>18</sub>alkyl which is interrupted by COO or OCO or O, or is interrupted by O and substituted by OH; and

G<sub>9</sub>, G<sub>10</sub>, G<sub>11</sub> and G<sub>12</sub> independently are hydrogen, methyl, hydroxy or OG<sub>8</sub>; and G<sub>9</sub> and G<sub>12</sub> also comprise phenyl; and

(b) is a colour former.

**34. (new):** The process according to claim 33, wherein component (a) is a compound of the formula (A)



wherein

$\text{R}_2$  is methyl or tertiary  $\text{C}_4\text{-C}_{12}$  alkyl;

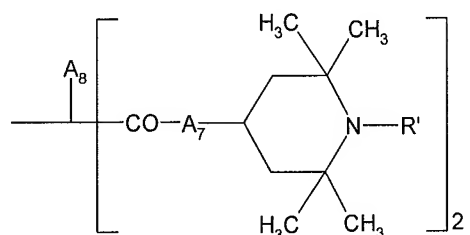
$\text{R}_3$ ,  $\text{R}_4$  and  $\text{R}_5$  independently are hydrogen, methyl or tertiary  $\text{C}_4\text{-C}_{12}$ alkyl;

$n$  is from the range 1-4:

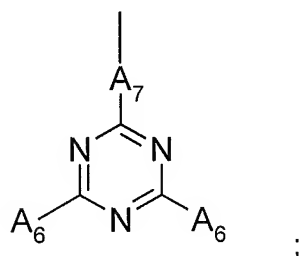
when  $n$  is 1,

$\text{R}_1$  is tertiary  $\text{C}_4\text{-C}_{12}$ alkyl;  $\text{C}_1\text{-C}_{22}$ alkyl- $\text{A}_5$ -;  $\text{C}_2\text{-C}_{22}$ alkyl interrupted by  $-\text{A}_5$ -;  $-\text{A}_5$ -phenyl;  $-\text{A}_5$ -phenyl where the phenyl core is substituted by  $\text{C}_1\text{-C}_{12}$ alkyl;  $-\text{A}_4$ -phenyl where the phenyl core is substituted by  $\text{C}_2\text{-C}_{12}$ alkanoyloxy and/or  $\text{C}_3\text{-C}_{12}$ alkenoyloxy, and optionally further by

$\text{C}_1\text{-C}_{12}$ alkyl; or  $\text{R}_1$  together with  $\text{R}_5$  is  $\text{C}_3\text{-C}_{22}$ alkylene or  $\text{C}_3\text{-C}_{22}$ oxaalkylene attached with both open bonds to adjacent carbon atoms of the mono-hydroxyphenyl moiety; or is a group of one the formulae



$-\text{A}_3-(\text{O})_m-\text{P}(=\text{O})_p(\text{OA}_1)(\text{OA}_2)$ ; or



where m and p independently are 0 or 1;

A<sub>1</sub> and A<sub>2</sub> independently are C<sub>1</sub>-C<sub>12</sub>alkyl or phenyl or phenyl substituted by C<sub>1</sub>-C<sub>12</sub>alkyl or an equivalent of an alkaline, alkaline earth or aluminum atom;

A<sub>3</sub> is a direct bond or C<sub>1</sub>-C<sub>8</sub>alkylene;

A<sub>4</sub> is selected from C<sub>1</sub>-C<sub>8</sub>alkylene, -O-, -NH-, -S-, -CO-, -COO-, -OCO-, -NHCO- and -CONH-;

A<sub>5</sub> is selected from -O-, -NH-, -S-, -CO-, -COO-, -OCO-, -NHCO- and -CONH-;

A<sub>6</sub> is selected from C<sub>1</sub>-C<sub>18</sub>alkoxy, C<sub>1</sub>-C<sub>18</sub>alkylthio and C<sub>1</sub>-C<sub>18</sub>alkylamino;

A<sub>7</sub> is -O- or -NH-;

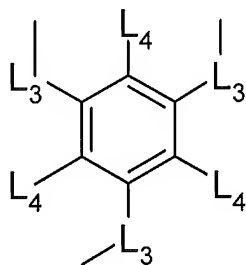
A<sub>8</sub> is C<sub>1</sub>-C<sub>7</sub>alkyl; and

R' is C<sub>1</sub>-C<sub>18</sub>alkyl;

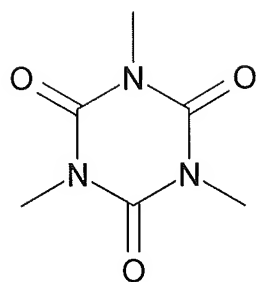
when n is 2, R<sub>1</sub> is C<sub>1</sub>-C<sub>20</sub>alkylene which may be interrupted and/or end-capped with -O-, -NH-, -S-, -CO-, -COO-, -OCO-, -NHCO-, -CONH-, -L<sub>1</sub>-, phenylene, phenylene which is substituted by C<sub>1</sub>-C<sub>12</sub>alkyl and/or C<sub>1</sub>-C<sub>12</sub>alkoxy and/or C<sub>2</sub>-C<sub>12</sub>alkanoyloxy and/or C<sub>3</sub>-C<sub>12</sub>alkenoyloxy;

divalent mono-, di- or tricycloalkylene groups; divalent mono-, di- or tricycloalkylene groups interrupted by -O-, -O-, -NH-, -S-, -CO-, -COO-, -OCO-, -NHCO-, or -CONH-;

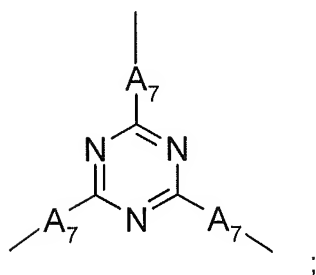
when n is 3, R<sub>1</sub> is trivalent alkyl of 3 to 20 carbon atoms; said trivalent alkyl interrupted or end-capped with -O-, -NH-, -S-, -CO-, -COO-, -OCO-, -NHCO-, -CONH-, -L<sub>1</sub>-, phenylene or phenylene which is substituted by C<sub>1</sub>-C<sub>12</sub>alkyl and/or C<sub>1</sub>-C<sub>12</sub>alkoxy and/or C<sub>2</sub>-C<sub>12</sub>alkanoyloxy and/or C<sub>3</sub>-C<sub>12</sub>alkenoyloxy; or trivalent groups of the formulae





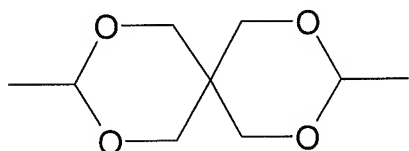
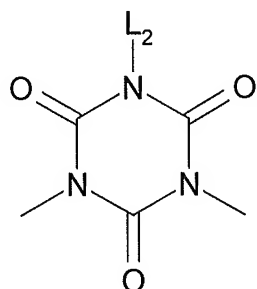


or

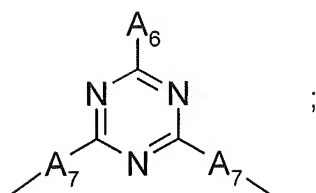


when n is 4, R<sub>1</sub> is tetravalent alkyl of 4 to 20 carbon atoms; said tetravalent alkyl interrupted or end-capped with -O-, -NH-, -S-, -CO-, -COO-, -OCO-, -NHCO-, -CONH-, -L<sub>1</sub>-, phenylene or phenylene which is substituted by C<sub>1</sub>-C<sub>12</sub>alkyl and/or C<sub>1</sub>-C<sub>12</sub>alkoxy and/or C<sub>2</sub>-C<sub>12</sub>alkanoyloxy and/or C<sub>3</sub>-C<sub>12</sub>alkenoyloxy;

L<sub>1</sub> is a group selected from the formulae



and



L<sub>2</sub> is OH, C<sub>1</sub>-C<sub>12</sub>alkyl, C<sub>1</sub>-C<sub>12</sub>alkoxy, C<sub>2</sub>-C<sub>12</sub>hydroxyalkyl; or C<sub>2</sub>-C<sub>12</sub>hydroxyalkoxy;

L<sub>3</sub> independently are C<sub>1</sub>-C<sub>4</sub>alkylene; and

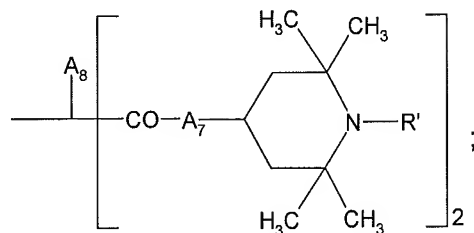
L<sub>4</sub> independently are H or C<sub>1</sub>-C<sub>4</sub>alkyl.

**35. (new):** The process according to claim 34, wherein R<sub>2</sub> is methyl, tert-butyl or tert-pentyl;

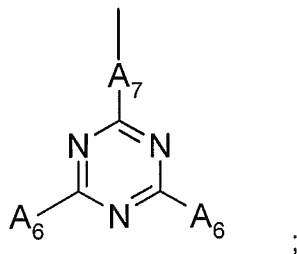
R<sub>3</sub>, R<sub>4</sub> and R<sub>5</sub> independently are hydrogen, methyl, tert-butyl or tert-pentyl;

when n is 1,

R<sub>1</sub> is tertiary butyl, tertiary pentyl; C<sub>1</sub>-C<sub>22</sub>alkyl-A<sub>5</sub>; C<sub>2</sub>-C<sub>22</sub>alkyl interrupted by -A<sub>5</sub>; -A<sub>5</sub>-phenyl where the phenyl core is substituted by C<sub>1</sub>-C<sub>12</sub>alkyl; -A<sub>4</sub>-phenyl where the phenyl core is substituted by C<sub>3</sub>-C<sub>4</sub>alkenoyloxy and C<sub>1</sub>-C<sub>12</sub>alkyl; or R<sub>1</sub> together with R<sub>5</sub> is C<sub>3</sub>-C<sub>22</sub>alkylene or C<sub>3</sub>-C<sub>22</sub>oxaalkylene attached with both open bonds to adjacent carbon atoms of the mono-hydroxyphenyl moiety; or R<sub>1</sub> is a group of one the formulae



-A<sub>3</sub>-P(=O)(OA<sub>1</sub>)(OA<sub>2</sub>); or



where

A<sub>1</sub> and A<sub>2</sub> independently are C<sub>1</sub>-C<sub>4</sub>alkyl or an equivalent of a metal atom selected from Li, Na, K, ½ Mg, ½ Ca and 1/3 Al;

A<sub>3</sub> is methylene;

A<sub>4</sub> is C<sub>1</sub>-C<sub>8</sub>alkylene;

A<sub>5</sub> is selected from -O-, -S-, -COO-, -OCO-, -NHCO- and -CONH-;

A<sub>6</sub> is selected from C<sub>4</sub>-C<sub>18</sub>alkylthio and C<sub>4</sub>-C<sub>18</sub>alkylamino;

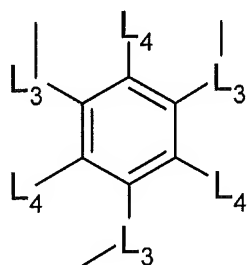
A<sub>7</sub> is -NH-;

A<sub>8</sub> is C<sub>1</sub>-C<sub>7</sub>alkyl; and

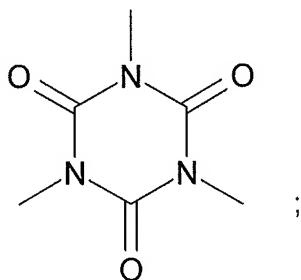
R' is C<sub>1</sub>-C<sub>18</sub>alkyl;

when n is 2, R<sub>1</sub> is C<sub>1</sub>-C<sub>12</sub>alkylene; C<sub>2</sub>-C<sub>20</sub>alkylene interrupted and/or end-capped with -O-, -S-, -COO-, -OCO-, -NHCO-, -CONH- or -L<sub>1</sub>-; or R<sub>1</sub> is a divalent mono-, di- or tricycloalkylene group; or R<sub>1</sub> is -O-, -NH-; or -S-;

when n is 3, R<sub>1</sub> is trivalent alkyl of 3 to 20 carbon atoms; said trivalent alkyl interrupted by -O-, -S-, -COO-, -OCO-, -NHCO-, -CONH-, phenylene or phenylene which is substituted by C<sub>1</sub>-C<sub>12</sub>alkyl; or R<sub>1</sub> is a trivalent group of one of the formulae

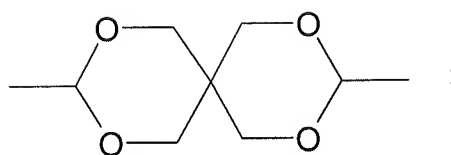


or



when n is 4, R<sub>1</sub> is tetravalent alkyl of 4 to 20 carbon atoms; or said tetravalent alkyl interrupted by -O-, -S-, -COO-, -OCO-, -NHCO- or -CONH-; and

L<sub>1</sub> is a group of the formula



L<sub>3</sub> independently are C<sub>1</sub>-C<sub>4</sub>alkylene; and

L<sub>4</sub> independently are H or C<sub>1</sub>-C<sub>4</sub>alkyl.

**36. (new):** The process according to claim 33, wherein the colour former is a triphenylmethane, lactone, benzoxazine, spiropyran, fluoran or phthalide.

**37. (new):** The process according to claim 33, wherein the polymeric material contains 0.001 to 10 % by weight of component (a), based on the total weight of the polymeric material.

**38. (new):** The process according to claim 33, wherein the polymeric material contains 0.001 to 10 % by weight of the colour former with respect to the total weight of the polymeric material.

**39. (new):** The process according to claim 33, wherein the polymeric material contains 0.01 to 5 % by weight of the colour former with respect to the total weight of the polymeric material.

**40. (new):** The process according to claim 33, wherein the polymeric material is a transparent thermoplast.

**41. (new):** The process according to claim 33, wherein the polymeric material is selected from the group consisting of styrene acrylonitrile copolymer, polyolefin, polyvinylchloride, polychlorobutadiene, polyesters and glycol modified polyesters, polyacrylics, polystyrene, acrylonitrile styrene acrylate copolymer, polyamide, acrylonitrile styrene butadiene copolymer, polycarbonate and blends or alloys thereof.